REMARKS

Applicants thank Examiner Johnson for his courteous and congenial interview with Applicants' representative and Dr. Nate Brese, a co-inventor or the present application, on February 19, 2004.

Claims 1-22 are pending in the present application.

Claims 7-22 are allowed.

Claims 1-6 are rejected.

Claim 1 is amended to include the subject matter of claim 4, and claim 4 is canceled in view of the amendment to claim 1.

Claim 1 is rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. 5,618,594 to Tulloch et al. Applicants respectfully traverse this rejection.

Amended claim 1 recites a chemical vapor deposited, freestanding β phase polycrystalline silicon carbide having a thermal conductivity of at least 375 W/mK and a crystalline order ratio of less than about 0.10. Tulloch et al. do not teach such a chemical vapor deposited, freestanding β phase polycrystalline silicon carbide. Tulloch et al. are totally silent on crystalline order ratios.

Applicants respectfully request withdrawal of the rejection of claim 1 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. 5,618,594 to Tulloch et al.

Claims 5 and 6 are rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. 6,077,619 to Sullivan. Applicants respectfully traverse this rejection.

As discussed during the telephone interview Sullivan does not teach a chemical vapor deposited, freestanding β phase polycrystalline silicon carbide comprising a crystalline order ratio of less than about 0.10 as recited in present claim 5. Sullivan also does not teach a chemical vapor deposited, freestanding β phase polycrystalline silicon carbide comprising a crystalline order ratio of from about 0.05 to about 0.01 as recited in present claim 6. Sullivan is totally silent on crystalline order ratios. Further, the silicon carbide disclosed in Sullivan does not have a crystalline order ratio.

Enclosed with this Amendment are two X-ray diffraction patterns of chemical vapor deposited, freestanding β phase polycrystalline silicon carbide within the scope of the present claims. The diffraction patterns show peaks at about 35, 41, 44, 50 and 60 degrees. This indicates that the silicon carbide of the presently claimed invention has a random distribution of

crystalline orientations. In contrast, the silicon carbide of Sullivan has a generally orientated crystalline distribution at {111}, thus free of stacking faults (Sullivan, col. 6, lines 15-26, and Figure 2). The silicon carbide of Sullivan does not have random distribution of crystalline orientations. Figure 2 of Sullivan shows a very different X-ray diffraction pattern. The X-ray diffraction pattern of Sullivan shows a high peak at {111} (about 35 degrees) for β silicon carbide (Sullivan col. 6, lines 8-11). The remainder of the pattern is distinctly different from the x-ray diffraction patterns of the presently claimed invention.

Additionally, the peak at 35 degrees does not have the characteristic left shoulder (encircled) of the two patterns of the freestanding, β phase polycrystalline silicon carbide of the presently claimed invention. This is indicative of a fault, which is totally absent from Sullivan's X-ray diffraction pattern. It is this shoulder, which indicates that the silicon carbide of the presently claimed invention has a crystalline order ratio. The absence of such a shoulder indicates that silicon carbide does not have such a ratio. Sullivan's silicon carbide does not have a crystalline order ratio because its X-ray diffraction pattern does not have this shoulder. Accordingly, Sullivan does not anticipate claims 5 and 6.

Applicants' respectfully request withdrawal of the rejection of claims 5 and 6 under 35 U.S.C. §102(b) as allegedly anticipated by U.S. 6,077,619 to Sullivan.

Claims 1-3 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. 5,374,412 to Pickering et al. Applicants respectfully traverse this rejection.

Pickering et al. do not teach or suggest a chemical vapor deposited, freestanding β phase polycrystalline silicon carbide having a thermal conductivity of at least 375 W/mK and a crystalline order ratio of less than about 0.10 (amended claim 1). Pickering et al. are totally silent on crystalline order ratios. Nor do Pickering et al. provide any reason or motivation to make silicon carbide as recited in amended claim 1. Accordingly, claim 1 and dependent claims 2-3 would not have been obvious over Pickering et al.

Applicants respectfully request withdrawal of the rejection of claims 1-3 under 35 U.S.C. §103(a) over U.S. 5,374,412 to Pickering et al.

Claims 2-3 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. 5,618,594 to Tulloch et al. Applicants respectfully traverse this rejection.

Claims 2 and 3 depend directly or indirectly from amended claim 1. Tulloch et al. do not teach or suggest the crystalline order ratio for silicon carbide as recited in amended claim 1. Tulloch et al. are totally silent on such crystalline order ratios. Nor do Tulloch et al. provide any reason or motivation for making a silicon carbide as recited in amended claim 1.

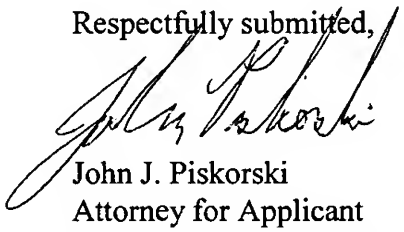
Applicants respectfully request withdrawal of the rejection of claims 2 and 3 under 35 U.S.C. §103(a) over U.S. 5,618,594 to Tulloch et al.

Claim 4 is rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. 5,618,594 to Tulloch et al. in combination with U.S. 6,077,619 to Sullivan.

Claim 4 is canceled. Accordingly, this rejection is moot.

Favorable consideration and allowance of claims 1-3, 5 and 6 are earnestly solicited.

Respectfully submitted,



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